

SOUTH EASTERN EUROPE POLLUTION PLATFORM WESTERN BALKANS REGIONAL WASTE CONFERENCE

GEF - Enhanced Cross-sectoral Land Management
through Land Use Pressure Reduction and Planning
in Serbia: project's impact

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Serbian Environmental Protection Agency
Vienna, 25 – 27 March, 2024

The Serbian Environmental Protection Agency is an administrative body within the Ministry of Environmental Protection, and performs state administration tasks related to:

- Development and management of the national environmental protection information system
- Implementation of the state monitoring of air and water.
- Collection of environmental data, their processing and preparation of reports on the state of the environment
- Management of Cadaster of contaminated sites
- Cooperation with the European Environmental Protection Agency (EEA) and the European Information and Observation Network (EIONET)

Република Србија
Министарство заштите животне средине
ИЗВЕШТАЈ О СТАЊУ ЖИВОТНЕ СРЕДИНЕ
У РЕПУБЛИЦИ СРБИЈИ

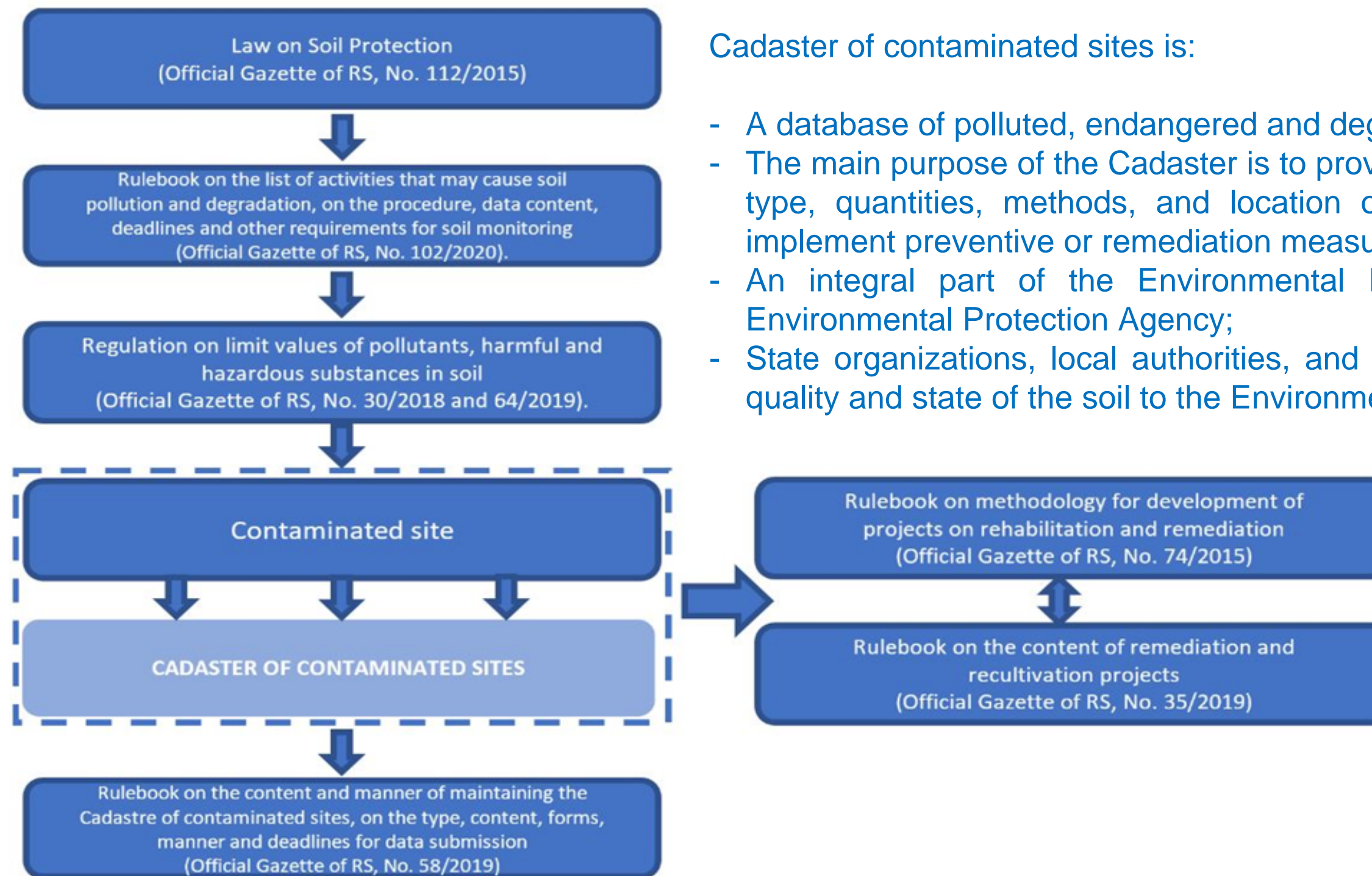


Land and Soil Resources in Legislative Context

- Law on Environmental Protection (2004);
 - Law on Soil Protection (2015);
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- Regulation on systematic monitoring of the condition and quality of soil (2020);
 - Regulation on limit values of pollutants, harmful and hazardous substances in soil (2019);



Legal framework for contaminated sites management in Serbia



Cadaster of contaminated sites is:

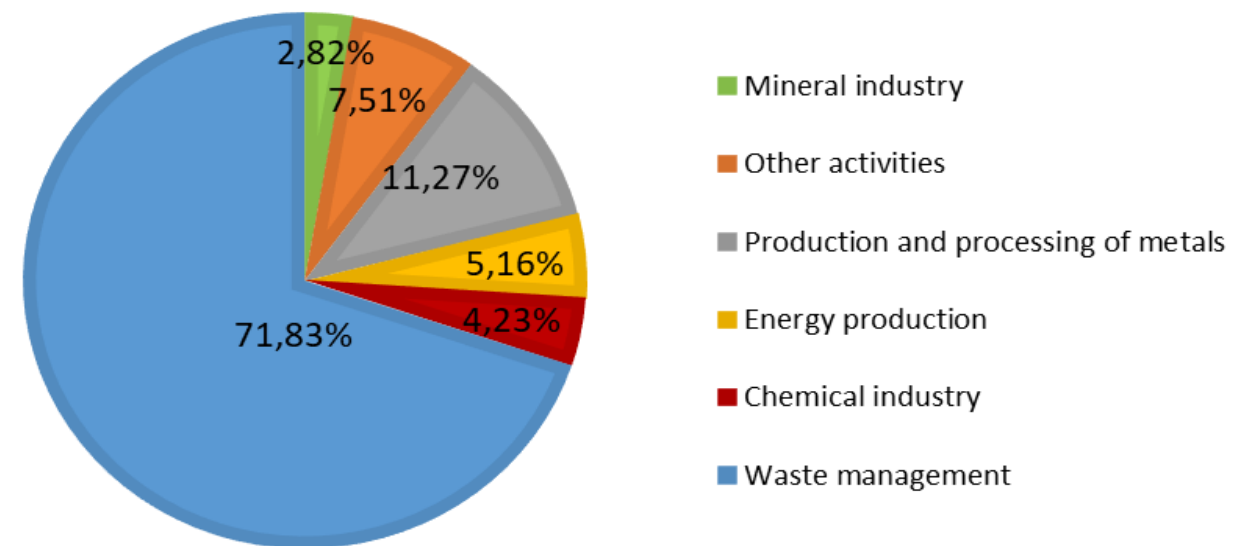
- A database of polluted, endangered and degraded soils;
- The main purpose of the Cadaster is to provide systematic data on sources of pollution such as the type, quantities, methods, and location of discharges of pollutants into the soil, in order to implement preventive or remediation measures.
- An integral part of the Environmental Protection Information System administered by the Environmental Protection Agency;
- State organizations, local authorities, and polluters are obliged to provide information about the quality and state of the soil to the Environmental Protection Agency (31 March).

Cadaster of Contaminated Sites (2020)

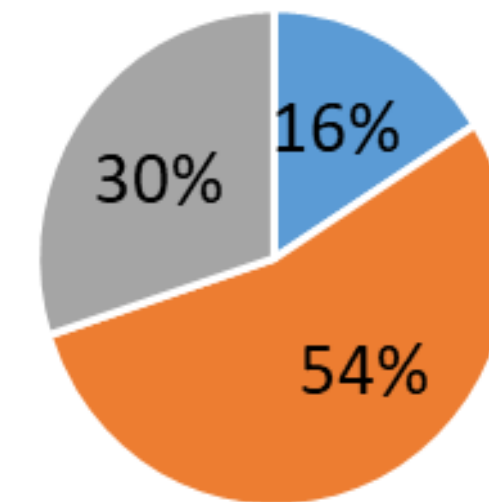
- 213 sites.
- Activities that are carried out in these locations are regulated by the Rulebook on the list of activities that may cause soil pollution and degradation, on the procedure, data content, deadlines, and other requirements for soil monitoring (“Official Gazette of RS”, No. 102/2020).
- The report on soil monitoring was submitted by 21 companies.
- Waste disposal sites have the largest share of 71.83 % of the total number of sites.
- A total of 1,294,126 tons of municipal waste was landfilled at twelve sanitary landfills in Serbia, which is around 50% of the total collected and landfilled municipal waste in 2022.

Basic characteristics of dumpsites that refer to potential soil pollution

Share of main localized sources of soil pollution in the total number of identified sites (%)



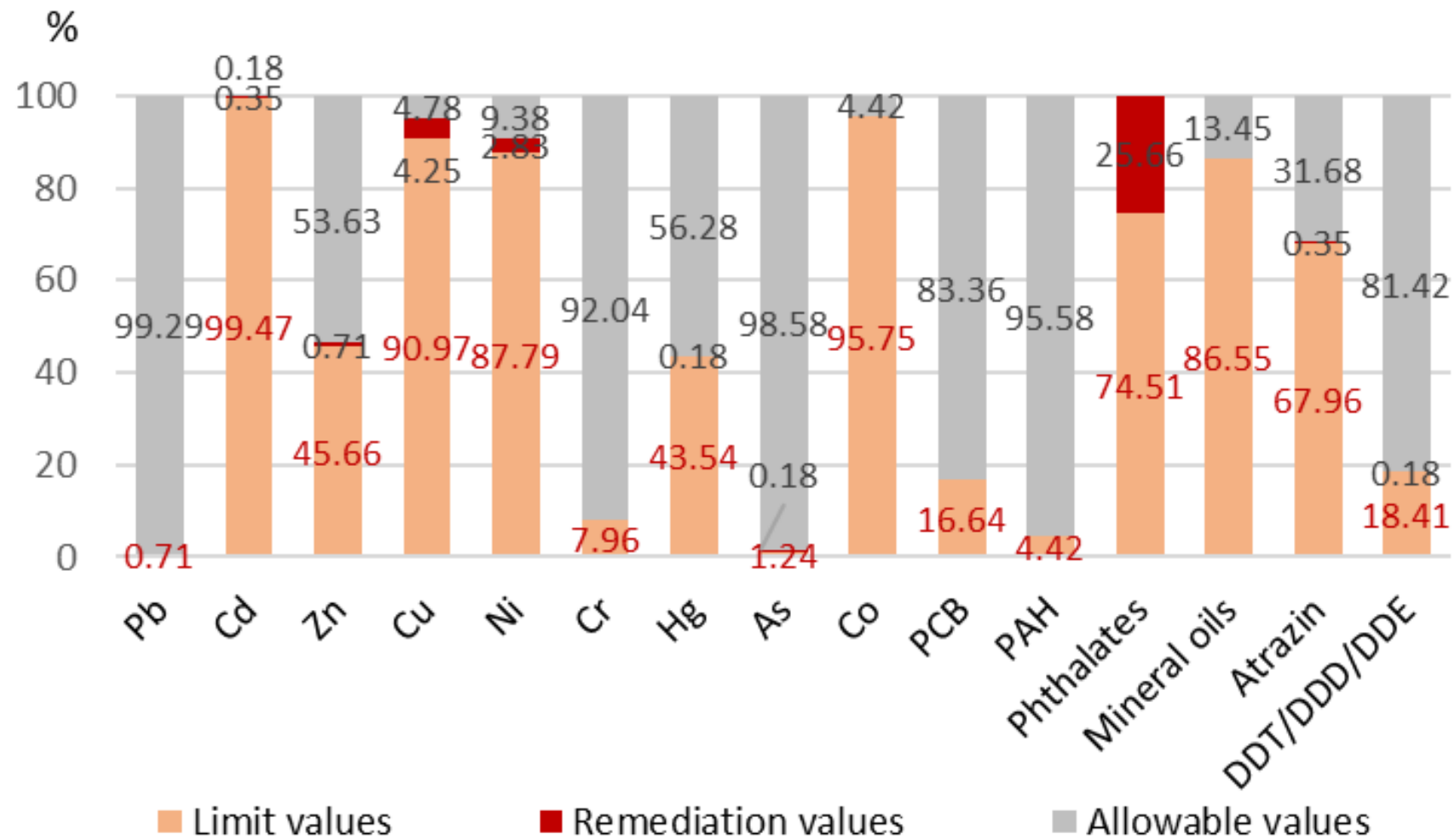
Are there any works related to the remediation, closing down and recultivation project on the site (61)?



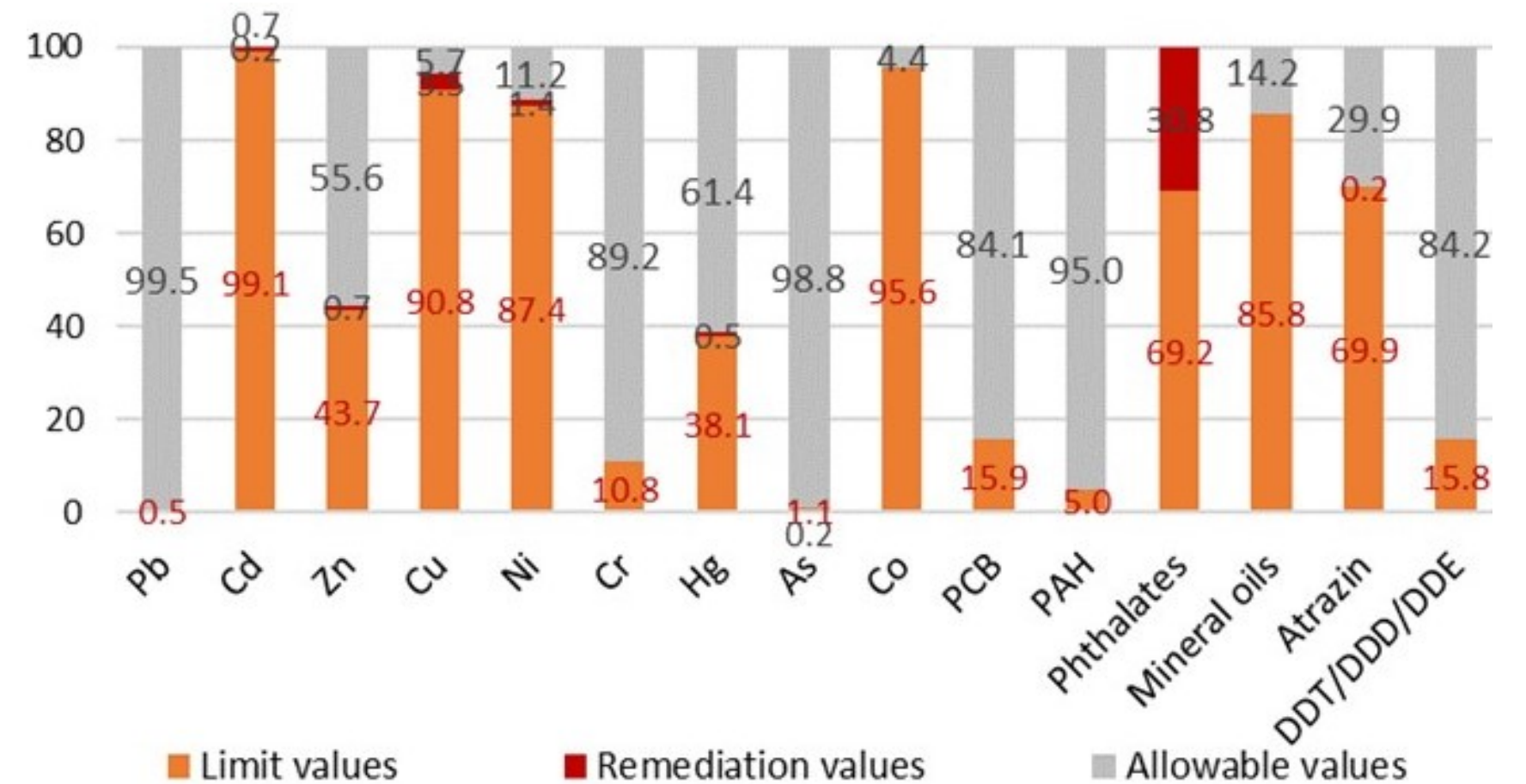
■ yes ■ no ■ partially

SOIL ANALYSES IN THE SURROUNDINGS OF DUMPSITES IN VOJVODINA REGION

- Degree of endangerment of non-agricultural land from chemical pollution in 30 municipalities and cities, at 113 illegal dumpsites.
- 1,130 soil samples were analyzed



Percentage of exceedances at depths of 0-30 cm in the central points of the dumpsites



Percentage of exceedances at depths of 30-60 cm in the central points of the dumpsites

UN Environment/GEF project

“Enhanced Cross-sectoral Land Management through Land Use Pressure Reduction and Planning”

Implemented by the UN Environment Programme in close cooperation with the Ministry of Environmental Protection and SEPA and with the support of the Italian Ministry for the Environment, Land and Sea

- Project Duration: October 2015 – September 2021.
- Capacity Building for Investigation of Contaminated Sites
- Sampling and analysis of specific pollutants at 32 sites
- Development of Characterisation Plans for abandoned chemical industries
- Application of PRA.MS methodology for preliminary risk assessment to human health and environment
- Development of the Cadaster of Contaminated Sites – upgrade to SEPA’s information system



MULTISECTORAL WORKING GROUP

Ministry of Environmental
Protection



Ministry of Health



Standing Conference of
Towns and
Municipalities

Provincial Secretariat for
Urban Planning and
Environmental Protection



Faculty of Agriculture,
Belgrade



Institute of Field and
Vegetable Crops

Republic
Hydrometeorological
Institute



Faculty of Technology and
Metallurgy, Belgrade

Institute for Public
Health, Belgrade

Geological Institute of Serbia



UN Environment
Programme



Institute for Public
Health of Serbia



Soil Institute

Forestry and Environment
Action



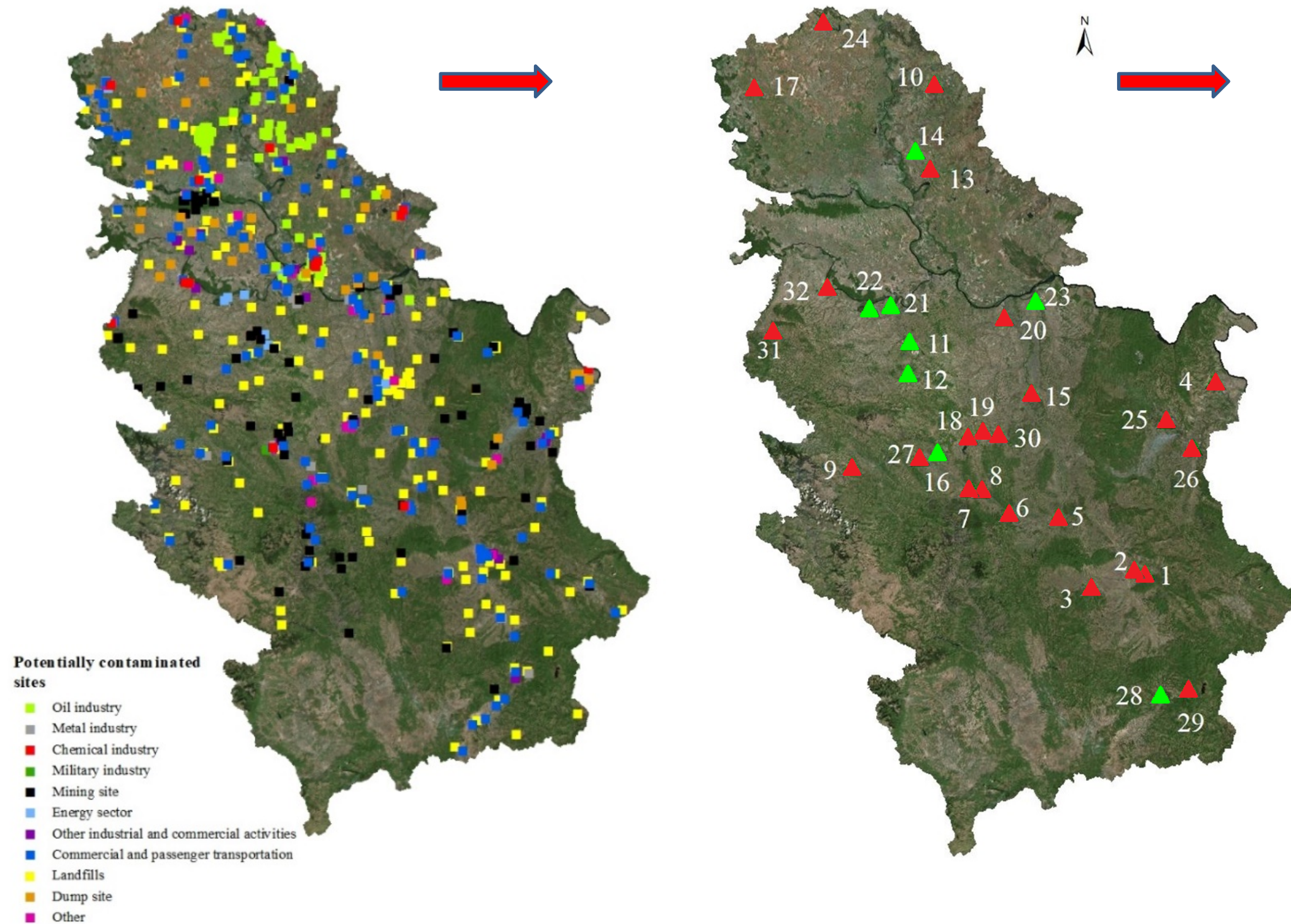
Faculty of Agriculture Novi Sad



Универзитет у Београду
Шумарски факултет

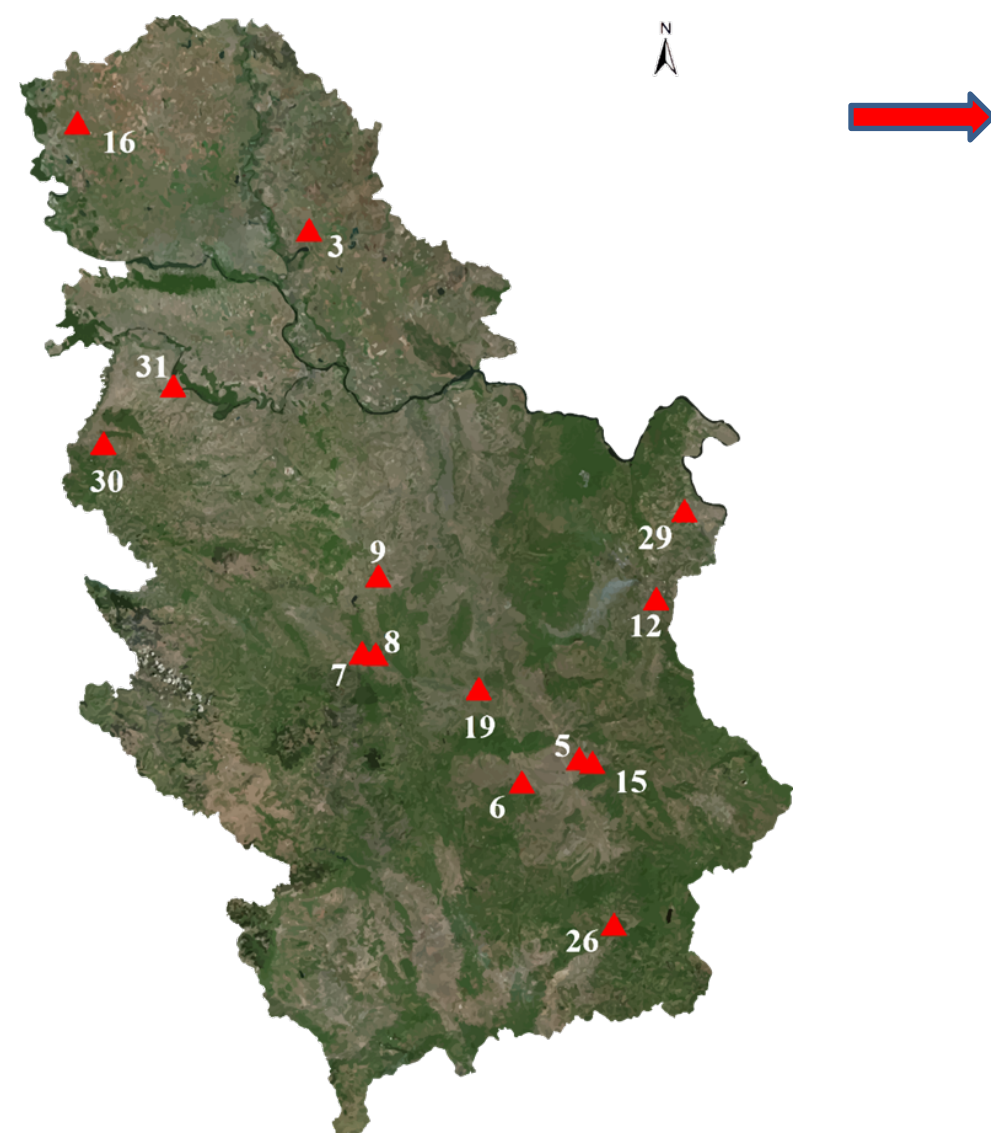
Faculty of Forestry Belgrade

UN Environment/GEF project



	Name of industrial complex	Parameters with exceeded remediation values in soil	Industrial and commercial activities causing soil contamination
1	Ei Nš	Pb	Electronic industry
2	MIN - Niš	Cu, Zn, Pb	Metal working industry
3	Fabrika obojenih metala - Prokuplje	Cr, Cu, Ni, Zn	Metal working industry
4	RTB Bor	As, Cu	Mining operations
5	HI Župa - Kruševac	Hg, Cr, Cu, Ni, Zn, Pb, As	Chemical industry
6	Prva Petoletka - Trstenik	As, Cu, Ni, Cd, Zn	Metal working industry
7	Fabrika vagona Kraljevo	Cr, Cu, Zn, Pb, Ni, As	Metal working industry
8	Magnohrom Kraljevo	As, Ni, Cr, Cu,	Metal working industry
9	Valjaonica Bakra - Sevojno -Užice	Cu, Zn, Cr, Ni	Metal working industry
10	Toza Marković - Kikinda	Zn	Glass, ceramics, stone, soil industry
13	a.d. Radijator - Zrenjanin	PCB	Metal working industry
15	TE Morava - Svilajnac	Ni	Energy industry
17	Fabrika akumulatora Sombor	Pb	Metal working industry
18	Šumadija d.o.o. - Kragujevac	As, Cu, Ni, Zn	Metal working industry
19	Zastava Kamioni - Kragujevac	Cu	Car industry
20	Železara Smederevo	Ni, Pb, Zn	Metal working industry
24	HI Zorka - Subotica	As, Cu, Zn	Chemical industry
25	KTK Koža - Zaječar	Cr, As, Pb	Textile, leather industry
26	IHP Prahovo	As	Chemical industry
27	PKS Latex - Čačak	Ni	Chemical industry
29	Fabrike brusnih ploca - Surdulica	As, Cu, Ni, Zn	Metal working industry
30	21. oktobar - Kragujevac	Cr, Cu, Ni, Zn	Metal working industry
31	HI Viskoza - Loznica	As, Cd, Cu, Pb, Zn	Chemical industry
32	Zorka – Obojena metalurgija - Šabac	PAH, DDE/DDD/DDT, As, Cd, Cr, Cu, Pb, Ni, Zn	Metal working industry

Locations where contaminated soil was found and requires remediation (14 sites)



Location	exceed RV	
	Inorganic pollutants	Organic pollutants
3. Radijator AD, Zrenjanin	/	PCB
5. Electronics Industry Niš	Pb	/
6. Non-ferrous metal factory, Prokuplje	Cr, Cu, Ni, Zn	C10-C40
7. Fabrika vagona AD, Kraljevo	As, Cu, Ni, Pb	/
8. Magnohrom, Kraljevo	As, Cu, Ni	/
9. Šumadija d.o.o., Kragujevac	As, Cu, Zn, Ni	/
12. Leather and Textile Processing Factory "Koža", Zaječar	As, Cr, Pb	/
15. Mechanical Engineering Industry Niš	As, Cr, Cu, Ni, Pb, Zn	/
16. Battery Factory, Sombor	Pb	C10-C40
19. Chemical Industry "ŽUPA" AD, Kruševac	As, Hg, Cr, Cu, Ni, Pb, Zn	/
26. Paper and packaging factory – Lagoons, Vladičin Han	/	/
29. "Elixir" Mineral Fertilizer Industry Prahovo, Negotin	As	/
30. Viskoza, Loznica	As, Cd, Cu, Pb, Ni, Zn	/
31. "Zorka" non-ferrous metallurgy, Šabac	As, Cd, Cr, Cu, Ni, Pb, Zn	DDE/DDD/DDT, PAH

PRIORITIZATION OF SITES – I PHASE

In order to set priorities for detailed investigations and remediation, all locations have been sorted into 4 groups (I-IV) according to the:

- amount of data on the state of the soil,
- concentrations of pollutants,
- types of pollutants,
- proximity of vulnerable facilities,
- activities on the given locations,
- size of the complex, and
- estimated scope of works.

Group I -
Locations where
analyzed
contaminants did
not exceed the
remediation
values

Group II -
Contains
locations for
which additional
monitoring is
proposed

Group III –
Locations where
urgent
remediation
activities are
required

Group IV -
Covers large
industrial
enterprises
where certain
parts of the
complex require
remediation

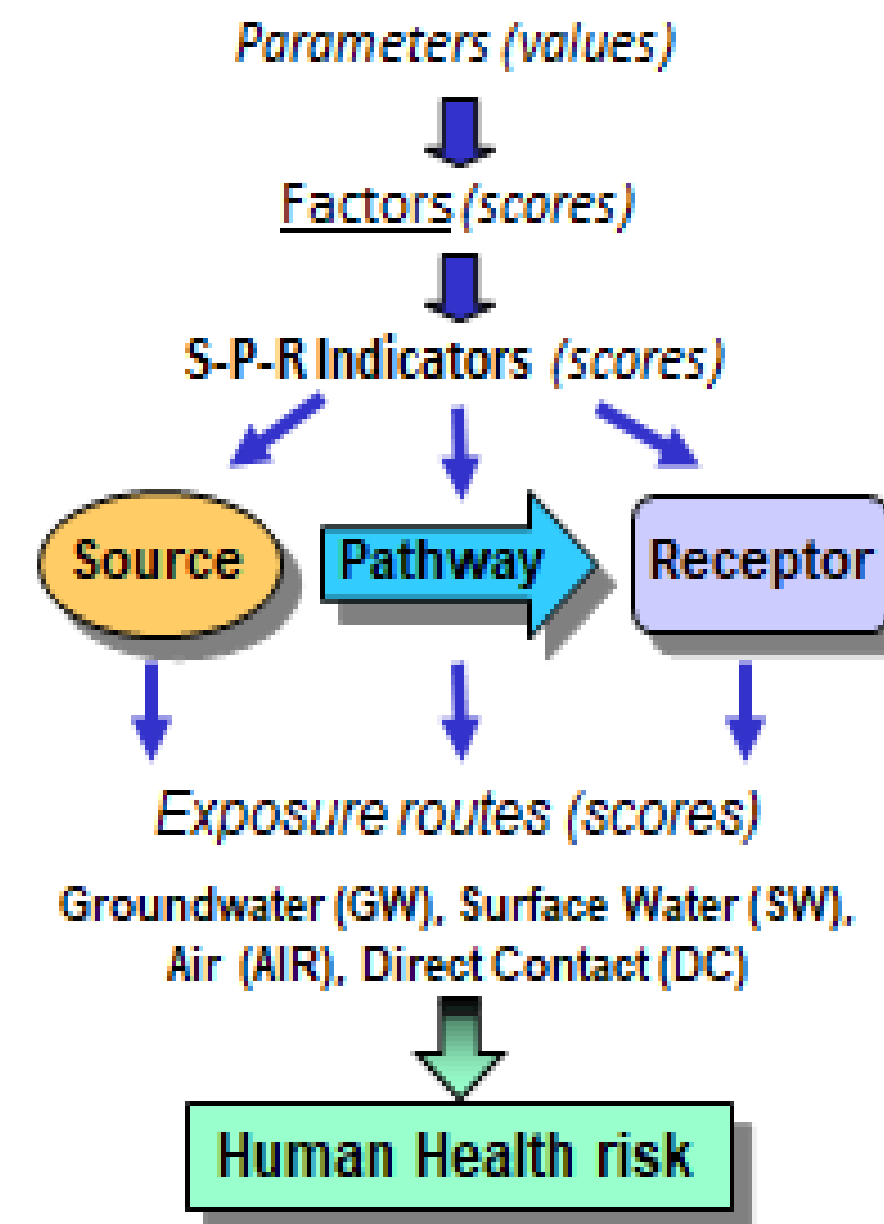
PRIORITISATION OF SITES – II PHASE PRELIMINARY RISK ASSESSMENT

GROUP 3 - AS 14 LOCATIONS ARE IDENTIFIED AS LOCATIONS WITH HIGHEST PRIORITY FOR SOIL REMEDIATION PROGRAMS, IT WAS NECESSARY TO ALSO COMPARE THEM FROM THE ASPECT OF RISK TO HUMAN HEALTH.

PRELIMINARY RISK ASSESSMENT MODEL FOR THE IDENTIFICATION AND ASSESSMENT OF PROBLEM AREAS FOR SOIL CONTAMINATION IN EUROPE – PRA.MS MODEL

EEA, 2005, "Towards an EEA Europe-wide assessment of areas under risk for soil contamination"

CONTAMINATED SITES PRIORITIZATION BASED ON THE RELATIVE RISK TO HUMAN HEALTH



RESULTS

TOTAL RISK VALUE

UNCERTAINTY FACTOR

EXPOSURE PATHWAYS

Development of by-law for contaminated sites data collection

CADASTER OF CONTAMINATED SITES *Content, forms, method and terms of data submission*

The content of the forms is given according to the phases of site research and phases of remediation implementation:

Form No. 1 - Identification of the contaminated site - Phase 1. This Form provides basic information about the site such as: name of the site, municipality/city where site location is, coordinates, ownership structure and what type of land use is at the location (Fig. 1);

Form No. 2 - Preliminary investigations of the contaminated site - Phase 2. This Form provides various information that may be relevant and determined by preliminary surveys such as: contaminated site and its area, depth of contaminated soil, groundwater pollution, proximity to sensitive areas (settlements, rivers, agricultural areas), type of land, etc;

Form No. 3 - Detailed research of the contaminated site - Phase 3. This Form provides detailed responses to the following questions: contaminated soil and its area, depth of contaminated soil, groundwater pollution, proximity to sensitive areas (settlements, rivers, agricultural areas), type of soil, etc;

Cadaster of contaminated sites

Content, forms, method and terms of data submission

The content of the forms is given according to the phases of site research and phases of remediation implementation:

Form No. 4 - Planned remediation - Phase 4. This Form provides information related to planned remediation techniques and costs, as well as planned remediation techniques to specific sources of pollution (if there are more than one);

Form No. 5 - Implemented remediation - Phase 5. This Form provides information related to the implemented remediation techniques and realized costs, as well as the application of remediation techniques to special sources of pollution (if there are more than one);

Form No. 6 - Monitoring after remediation - Phase 6. This Form provides information on monitoring state of the environment at a specific location after the applied remediation techniques.

TRAINING FOR THE SUBMISSION OF DATA FOR THE CADASTER OF CONTAMINATED SITES (October-December 2018)

✓ **TOTAL NUMBER OF CITIES
AND MUNICIPALITIES**

➤ 95 (57% of the total number)

✓ **NUMBER OF
PARTICIPANTS**

➤ 148

✓ **NUMBER OF MEETINGS
WITH LOCAL SELF-
GOVERNMENT**

➤ 14

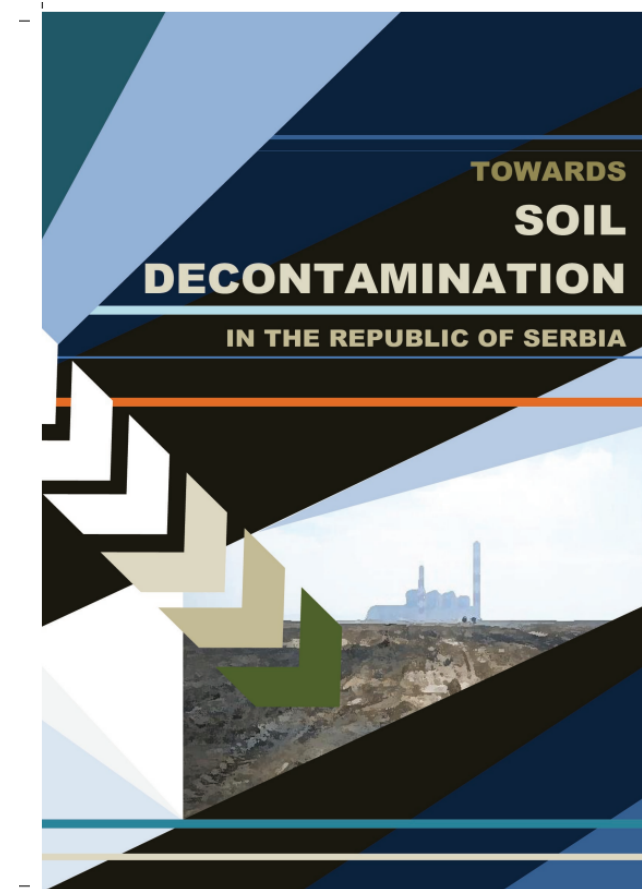


Outcomes

- The result of the project is the list of prioritized sites for clean-up and remediation.
- Out of 32, 14 locations need to be remediated according to the gathered information and investigation.
- For most of the remaining location, detailed investigation of the contamination extent is needed.
- It is expected that the next step forward will be the development of remediation projects for priority sites.

Transferability

- It is important to develop the National Strategy for Management of Contaminated Sites.
- Establishment of a legal framework for contaminated sites will be crucial in ensuring a faster and more efficient response to the problems related to the contaminated sites.
- It is also necessary to strengthen the institutional capacities to enable adequate management.



Actions needed

National Strategy for Management of Contaminated Sites

Identification of contaminated sites.
Improve inventory and register of those sites.
Remediate the sites that pose a significant risk to human health and the environment.

Facilitate a dialogue and knowledge exchange

Facilitate a dialogue and knowledge exchange at all levels on the risk assessment methodologies for soil contamination and identify best practices. The highest priority is set on the issues of capacity building, awareness raising, and improvement of data availability and transparency.

Increase capacity

Increase capacity for contaminants of major and/or emerging concern that pose significant risks for soil quality, and for which vigilance and priority action is needed.

It is essential to secure a permanent commitment, alongside an increasing acknowledgment of the urgent necessity for long-term solutions to these issues.

ACTION PLAN FOR THE IMPLEMENTATION OF THE SOFIA DECLARATION ON THE GREEN AGENDA FOR THE WESTERN BALKANS 2021-2030.

There is a necessity to identify and designate areas at risk from soil erosion, decline of organic matter, salinisation, acidification, **chemicals contamination**, compaction or landslides.

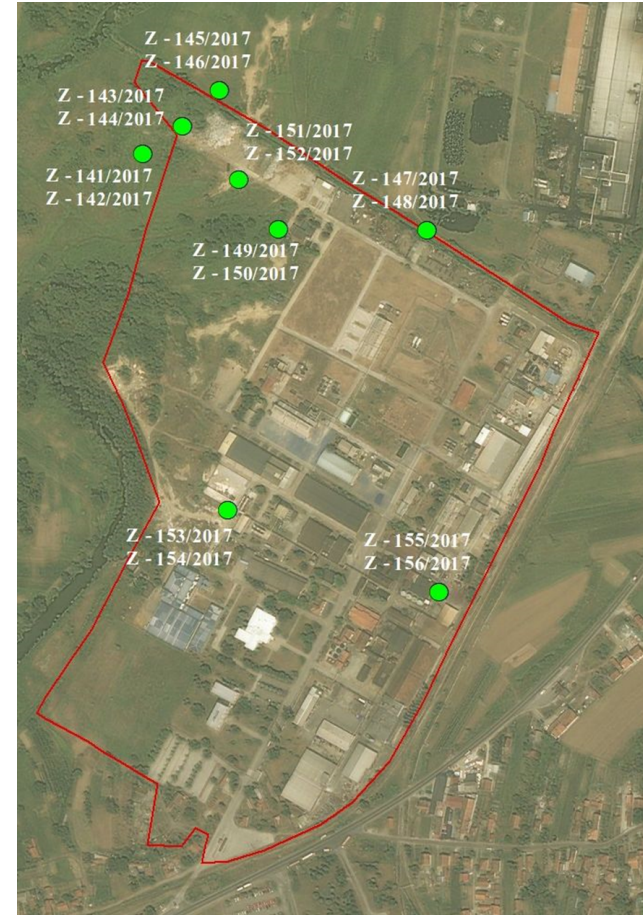
Legislation needs to be adopted, programmes and strategies on how to combat these challenges need to be drafted and adopted in the Western Balkan economies.

This includes strategies to protect and improve soil quality/status, combat soil sealing and remediate contaminated sites.

Data on soil status should be collected following the new EU approach. Significant pressures on soil are created due to recurring accidents. As such, there is a pronounced **need in the Western Balkans to assess the risks and consequences of accidents, with the ultimate goal of adopting recommendations/ legislation on how to introduce relevant instruments adequate for soil remediation.**

It is highly recommended to promote the use of green technologies and innovations in soil management and remediation in the Western Balkans.

To address the use and release of chemicals into the environment, Contaminated Sites Inventories should be set up while remedial works should be initiated in the Western Balkans.



ZORKA – Non ferrous metallurgy ŠABAC
PAH, DDE/DDD/DDT, As, Cd, Cr, Cu, Pb, Ni, Zn

HI ŽUPA KRUŠEVAC
Hg, Cr, Cu, Ni, Zn, Pb, As, Cd



VISKOZA LOZNICA
As, Cd, Cu, Ni, Pb, Zn

THANK YOU

FOR YOUR ATTENTION AND

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